

flics. An interesting day on the downs at Shoreham on Sea on 27th August found *Lysandra coridon* (Poda) L. and *Lysandra bellargus* (Rott.) L. common. The blacklight produced little exceptional at Box Hill, except a single specimen of *Paradiarsia glareosa* (Esp.) L. and *Amathes castanea* (Esp.) L.

Generally, I suppose the collecting season proved quite satisfying but variations in the weather were not conducive to success. I am always at a loss to understand why the favourable weather always seems to occur when I have to be indoors with my books preparing for examinations. Had I not found myself day-dreaming of *Atropos* I might even have passed!

MACRO-LEPIDOPTERA CANNAE

The Butterflies and Moths of Canna

By J. L. CAMPBELL

(concluded from 82: 299)

GEOMETRIDAE

Geometrinae

168. *Geometra papilionaria* L. (Large Emerald). Two only, one near the trap on 7/7/52, the other in my garden on 22/7/56.

Acidaliinae

169. *Acidalia aversata* L. (Riband Wave). Two only, in trap, on 31/7/63, 20/7/65.
 170. *A. bisetata* Hufn. (Small Fan-foot Wave). Quite common, in trap, earliest, 21/7/65; latest, 25/8/67; most, 16 in 1969; 13 in 1968.
 171. *A. fumata* Steph. (Smoky Wave). One only, in Tighard garden on 17/7/45.

Hydriomenidae

172. *Ortholitha limitata* Scop. (Shaded Broad-bar). Common around cliffs and southern slopes inaccessible to sheep. In trap, earliest, 3/8/55; latest, 4/9/61, most, 8 in 1967, 6 in 1955, '56. Several specimens of *O. limitata* were seen on Heisheir on 28/7/70.
 173. *Anaitis plagiata* L. (Treble-Bar). Common, in similar situations to *O. limitata*. In trap earliest, 2/7/63; latest, 13/9/67; most, 37 in 1969; 29 in 1966.
 174. *Carsia paludata* Thunb. (Manchester Treble-Bar). Two only, in good condition, 10/8/56, 11/8/63.
 175. *Lobophora polycommata* Hübn. (Barred Tooth-striped). One specimen, in trap on 6/5/69. Identified by Mr E. C. Pelham-Clinton.
 176. *L. carpinata* Borkh. (Early Tooth-Striped). A comparatively newcomer, probably owing to the planting of birches and alders since 1949. The first occurred in the trap on 19/4/64, and was later identified for me by Mr E. C. Pelham-Clinton. No more were taken until the spring of 1969, when the moth turned up several times, first on 25th April, then on the 29th. Specimens were also taken on the 5th and 6th of May. Most of these are of form *fasciata* Prout.

177. *Cheimatobia brumata* L. (Winter Moth). Common in gardens. On calm nights in December and January, particularly the former, the males are often seen at lighted windows. I have seen these moths at them when there was snow on the ground. The trap is very seldom used at this time of the year, but an early record is 21/11/66.
178. *Eustroma silaceata* Hübn. (Small Phoenix). First in trap on 2/6/68; another on 16/8/69. Probably a consequence of the introduction of willow-herb here.
179. *Lygris testata* L. (The Chevron). Common in the same kind of places as *O. limitata* and *A. plagiata*. In the trap, earliest, 28/7/68; latest, 24/9/67; most, 99 in 1955; 40 in 1969.
180. *L. populata* L. (Northern Spinach). Occurs in similar places to *L. testata*, but not so common. Few taken in trap; earliest, 26/7/55; latest, 27/8/64. On 27/7/68 a smallish specimen with the central bar much reduced, approaching the next species in appearance, was taken, later identified as *populata* by Mr A. L. Goodson, at Tring.
181. *C. fulvata* Forst. (Barred Yellow). Seen and taken in gardens and plantations. Few in trap; earliest, 25/7/52; latest, 27/8/64.
182. *Cidaria truncata* Hufn. (Common Marbled Carpet). Common. Double brooded. Of the three forms shown on plate 13 of *Moths* by E. B. Ford. No. 14, *nigerrimata*, the dark form, is considerably the commonest; *perfumata* the grey form, seems to occur mainly in the autumn brood; *rufescens* with the orange central area on the forewings is rare.
- Earliest, 10/5/66; latest, 23/10/56; most, 188 in 1966; 94 in 1968. The form *concinata* Steph. is also here and has been confirmed by Mr R. J. Colins, but I have made no attempt to count the different forms separately.
183. *C. citrata* L. (= *immanata* Haw). (Dark Marbled Carpet). Common, variable, single brooded; earliest, 6/7/66, '68; latest, 28/9/67; most, 188 in 1969; 115 in 1966.
184. *C. siterata* Hufn. (Red-green Carpet). Occasionally found on veronica blossoms in the autumn; in the trap, earliest, 6/6/65; latest, 4/10/51, '68 (hibernates); Most in the trap, 22 in 1969; 5 in 1968.
185. *C. miata* L. (Autumn Green Carpet). Occurrence similar to that of *C. siterata*, but rather commoner. In the trap, earliest, 2/5/69; latest, 20/10/62; most, 12 in 1966; 8 in 1969.
186. *Thera obeliscata* Hübn. (Grey Pine Carpet). Common, double-brooded. Often found on blossoms of thyme, ragwort, or veronica in the autumn. In the trap, earliest, 3/5/57; latest, 20/10/58, '66; most, 49 in 1956; 19 in 1969. A dark specimen of this species has been identified by Mr D. S. Fletcher as var. *pseudovariata*.
187. *T. cognata* Thunb. (Chestnut-coloured Carpet). Found on cliffs and rocky places where creeping juniper grows. In the trap, earliest, 6/6/59; latest, 13/10/64; most, 26 in 1968; 21 in 1969.
188. *T. firmata* Hübn. (Pine Carpet). First taken in the trap on 26/8/55; earliest, 2/8/66; latest, 24/9/61; most, 5 in 1965 and '66. Also noticed around the pine plantation below Compass Hill.
189. *T. juniperata* L. (Juniper Carpet). A specimen was taken at a lighted window on 18/9/69.

190. *Coremia munitata* Hübn. (Red Carpet). Two specimens, one taken in the trap on 16/7/68.
191. *C. spadicearia* Schiff. (Red Twin-spot Carpet). Two specimens. Separated from the following by Mr E. C. Pelham-Clinton.
192. *C. ferrugata* Clerck. (Dark Twin-spot Carpet). Four specimens. Of these two, the first was caught in the trap in 1955 and the last in 1964. Earliest, 6/6/63; latest, 22/8/55.
193. *C. designata* Rott. (Flame Carpet). Found in plantations. In trap, earliest, 3/5/57; latest, 7/9/56; most, 8 in 1968; 7 in 1966. Double-brooded.
194. *Amoeba viridaria* Fabr. (Green Carpet). Quite frequent in mixed plantations, but not taken in the trap until 18/7/56, and thereafter only singly in the years 1963-67. Earliest, 30/6/66; latest, 31/7/63.
195. *Malenydris salicata* Hübn. (Striped Twin-spot Carpet). Only taken three times in the trap, 7/8/57, 24/8/60, and 16/8/69.
196. *M. multistrigaria* Haw. (Mottled Grey). The earliest spring geometer, apart from *P. pendaria*, and liable to be missed if March weather is unfavourable for use of the trap. Earliest, 13/3/56; latest, 8/4/69; most, 23 in 1969; 16 in 1960.
197. *M. didymata* L. (Twin-spot Carpet). Common on the cliffs and sand-hills, especially in places and with weather when midges are plentiful. Rare in the trap; singly, 18/8/56, 2/9/65. Very common in plantations and sheltered grassy places in August 1969, when several were taken in the trap on calm nights.
198. *Venusia cambrica* Curt. (Welsh wave). Two only, in trap, 23/7/65, 16/8/65.
199. *Entephria caesiata* Lang. (Grey Mountain Carpet). One only, in trap in 16/7/56.
200. *E. flavicinctata* Hübn. (Yellow-ringed Carpet). One on a wall in my garden on 11/9/69; another in the same place on 16/9/69, and a third picked up dead in the porch of my house on 20/9/69. Identified as *ab. flavopriva* Scha. by Mr D. S. Fletcher.
201. *Xanthorhoe montanata* Bork. (Silver-ground Carpet). Common in plantations and on grassy slopes inaccessible to sheep, above the shore; in the trap, earliest, 30/5/64; latest, 8/8/66; most, 23 in 1968; 19 in 1966.
202. *X. fluctuata* L. (Garden Carpet). Common, double brooded, larvae sometimes a pest on cabbages. In trap, earliest, 13/4/67, latest, 22/9/66; most, 118 in 1968, 96 in 1966.
203. *X. galiata* Hübn. (Galium Carpet). Not common. Found on cliffs and sometimes around my house. First taken on 10/7/45, the G.U.C.E. record that took me longest to confirm. Nine specimens in all taken in trap, the first on 26/7/55. Earliest, 30/5/61; latest, 3/9/66; most, three in 1968.
204. *X. sociata* Borkh. (Common Carpet). Common around the plantations. The var. *obscurata*, which was frequent on Barra, is rare here. In trap, earliest, 5/5/69; latest 29/8/60. Double brooded in some years; most, 28 in 1968; 22 in 1969.
205. *Eulype hastata* L. (Argent and Sable). One only, in trap on 13/6/66.
206. *Mesoleuca albicillata* L. (Beautiful Carpet). Occasionally seen in gardens and plantations; a surprise when first observed. Two on 9/6/45; taken earlier. In the trap only on 15/7/51, 25/6/53, and

- 13/7/53. I have not noticed this moth here for a considerable time.
207. *M. ocellata* L. (Purple Bar). Quite common in mixed plantations. In the trap, earliest, 29/6/53; latest, 1/9/58; most, 8 in 1963 and 1969.
208. *Perizoma affinitata* Steph. (Rivulet). Fairly common around plantations. In the trap, earliest, 17/5/59; latest, 27/8/64; most, 19 in 1968, 13 in 1966.
209. *P. alchemillata* L. (Small Rivulet). Commoner than the preceding in similar places. In trap, earliest, 21/6/66; latest, 23/8/67; most, 63 in 1968; 52 in 1969.
210. *P. flavofasciata* Thunb. (Sandy Carpet). Occasionally around plantations. Not taken in the trap until 27/5/64, thereafter only on 2/6/65, 2/6/68, 16/6/68, and 19/6/69.
211. *P. albulata* Schiff. (Grass Rivulet). On sandhills and cliffs, not often in the trap. Earliest, 8/5/53; latest, 21/7/55 (a record for 12/10/62 must be considered doubtful).
212. *Camptogramma bilineata* L. (Yellow Shell). Common, especially in places not grazed by sheep, but very seldom taken in the trap, of four specimens taken in the trap over the years, the earliest was 11/8/64, the latest 4/10/61; but the moth is out in the last week of June. I do not find that dark forms predominate.
213. *Hydriomena furcata* Thunb. (July Highflier). Common in the plantations. Earliest, 12/7/56; latest, 27/9/66; most 28 in 1966; 19 in 1955.
214. *H. impluviata* Hübn. (May Highflier). Also common in the plantations. In the trap, earliest, 8/5/53; latest, 26/7/55; most 14 in 1964, 12 in 1952.
215. *Anticlea badiata* Hübn. (Shoulder Stripe). Larvae found on wild rose in August. Moth seen in the spring, sometimes at lighted windows. In the trap, earliest, 13/4/68; latest, 30/5/56; most, 10 in 1969; 4 in 1966.
216. *A. nigrofasciaria* Göze. (The Streamer). Less often seen than the preceding. First taken on a tree in the wood behind my house on 14/5/52. Only twice in the trap, on 9/5/53 and 21/5/69. [*Eupithecia* sp. In view of the difficulty in distinguishing between many of the species of this genus, and of the impossibility of setting all the specimens caught in the trap, I give statistics only in the cases of the easily recognisable ones].
217. *Eupithecia oblongata* Thunb. (Lime Speck). Often seen in garden, also found at ragwort blossoms. In the trap, earliest, 26/6/63; latest, 26/8/66; most, 8 in 1956, 4 in 1968.
218. *E. pulchellata* Steph. (Foxglove Pug). Found in plantations and garden where there are foxgloves. In the trap, earliest, 6/6/64; latest, 15/7/56; most, eight in 1956.
219. *E. venosata* Fabr. (Netted Pug). On cliffs. Only four specimens in the trap, first on 28/5/59. Earliest in trap, 28/5/59; latest, 21/6/64.
220. *E. distinctaria constrictata* Guen. (Thyme Pug). Caught in the trap in 1966 and identified by Mr D. S. Fletcher. Also taken at Garrisdale at the west end of Canna.
221. *E. assimolata* Doubl. (Current Pug). Two specimens, identified by Mr E. C. Pelham-Clinton.

222. *E. absinthiata* Clerck. (Wormwood Pug). In plantations. Confirmed by Mr R. J. Collins and Mr D. S. Fletcher. The few moth trap records are dated 7/8/56, 7/8/61 (two), 21/7/65.
223. *E. goosensiata* Mab. (Ling Pug). On moorland. Confirmed by Mr R. J. Collins. No certain trap record.
224. *E. vulgata* Haw. (Common Pug). Common in the garden and plantations. In trap, earliest, 22/5/61; latest, 14/7/68; most, 10 in 1966.
225. *E. virgaureata* Doubl. (Golden-rod Pug). Identified by Mr D. S. Fletcher; taken on trap in 1966.
226. *E. lariciata* Freyer. (Larch Pug). First taken in trap in 1954, identified by Mr W. H. T. Tams. This moth has become much commoner in recent years with the growth of the new plantation on the brae east of Canna House, the majority of trees there being Japanese larches. Most in the trap, 11 in 1966, when the moth first appeared on 15th July and last on 20th August. Confirmed by Mr D. S. Fletcher.
227. *E. castigata* Hübn. (Grey Pug). Identified by Mr D. S. Fletcher from a few specimens taken in the trap in 1966 and subsequently. Others taken in 1969 identified by Mr E. C. Pelham-Clinton. Much commoner in recent years.
228. *E. satyrata* Hübn. (Satyr Pug). Found in the plantations. Confirmed by Mr R. J. Collins. Occasionally in the trap. Also confirmed by Mr D. S. Fletcher in 1966, who identified a specimen of subsp. *callunaria* Dbedy., the same year (not typical here).
229. *E. innotata* subsp. *fraxinata* Crewe. (Ash Pug). Associated with ash trees in my garden and in the plantations. Confirmed by Mr D. S. Fletcher. Occasionally in the trap, earliest 17/5/59, latest, 21/7/65.
230. *E. nanata* Hübn. (Narrow-winged Pug). Common, widespread. In the trap, earliest, 3/5/57; latest, 29/7/64; most, 8 in 1968, 6 in 1966.
231. *E. sobrinata* Hübn. (Juniper Pug). Associated with the creeping juniper that grows on the cliffs here. In trap, earliest 31/5/68; latest, 23/8/67; Most, three in 1964 and 1966.
232. *Gymnoscelis pumilata* Hübn. (Double-striped Pug). A specimen was taken in the trap on 11/8/52, identity later confirmed by Mr D. S. Fletcher. This remains the only certain record.
233. *Chloroclystis rectangulata* L. (Green Pug). Common. In the trap, earliest, 21/6/64; latest, 31/8/57; most, 26 in 1968, 19 in 1966.
234. *Coenocalpe vittata* Borkh. (Oblique Carpet). Only three records. One taken in Tighard wood on 17/7/45, identity confirmed by Mr R. J. Collins. Otherwise only two in trap, 30/7/55 and 23/7/57.
235. *Phibalapteryx lapidata* Hübn. (Slender-striped Rufous). One only, in trap on 8/10/56.
236. *Percnoptilota fluviala* Hübn. (The Gem). Three only, one in trap on 22/9/66, two (male and female) on 20/10/69.
237. *Abraxas grossulariata* L. (Magpie). Common in gardens, but not found on moors here. (The small burns lined with heather and sallow, where it is found in South Uist and Barra, hardly exist on Canna). In the trap, earliest, 25/6/53, '59; latest, 25/9/66; most, 21 in 1968, 19 in 1966.
238. *Lomaspilis marginata* L. (Clouded Border). One only, in trap, 30/5/69.
239. *Cabera pusaria* L. (Common White Wave). Common in plantations, sometimes found on the moorland. In the trap, earliest, 23/5/51; latest,

- 11/8/65; most, 23 in 1968, 14 in 1966.
240. *C. exanthemata* Scop. (Common Wave). Two, in trap on 23/6/66 and 26/6/69. Confirmed by Mr E. C. Pelham-Clinton.
241. *Ellopija prosapiaria* L. (Barred Red). A newcomer, apparently now settled in the pine plantations. First taken, in the trap, on 2/8/66. Two more specimens were taken in 1966, one in 1967, five in 1968, and two in 1969. Earliest, 2/7/68; latest, 23/8/67.
242. *Metrocampa margaritaria* L. (Light Emerald). Common in plantations. On the trap, earliest, 24/4/56; latest, 22/8/63; most, 46 in 1968; 16 in 1969.
243. *Selenia bilunaria* Esp. (Early Thorn). First taken in the trap on 17/5/52. and occasionally since. Earliest, 25/4/65; latest, 17/6/66; most, 6 in 1969; 5 in 1968.
244. *S. lunaria* Hufn. (Lunar Thorn). Rare. First taken, in trap, on 30/5/64. Earliest, 26/5/65; latest, 30/5/68; most, three in 1968. (Confirmed by Mr E. C. Pelham-Clinton).
245. *Gonodontis bidentata* Clerck. (Scalloped Hazel). Occasionally found around plantations in May; in the trap, earliest, 8/5/53; latest, 18/6/66; most, 7 in 1966, 6 in 1964.
246. *Himera pennaria* L. (Feathered Thorn). At lighted window, Canna House, on 27/10/51. In trap, 12/10/64, 3/10/66 (two), and 19/10/69. A specimen was taken by the head lighthouse keeper at Heiskeir in 1949.
247. *Crocallis elinguaris* L. (Scalloped Oak). First taken, in trap, on 30/7/55; not again until 1/8/63 (two specimens). Two more so taken in 1965, and one in 1967. Earliest, 30/7/55; latest, 28/8/67. One in 1969, on 1st August.
248. *Opisthograptis luteolata* L. (Brimstone). Common; double brooded. In the trap, earliest, 10/5/66; latest, 18/9/66; most, 63 in 1968, 60 in 1966. Larvae have been found on alders.
249. *Semiothisa notata* L. (Peacock Moth). First taken, in trap, on 17/5/59. Others on 9/6/63, and 28/5/68. (Originally wrongly reported as *S. alternata*.)
250. *Hybernia aurantiaria* Esp. (Scarce Umber). One only, at lighted window in the winter of 1953-54. Confirmed by Mr D. S. Fletcher.
251. *H. marginaria* Borkh. (Dotted Border). One only, the same winter. Confirmed by Mr D. S. Fletcher.
252. *H. defoliaria* Clerck. (Mottled Umber). First noticed at lighted windows in the late autumn of 1951. Has become decidedly commoner in recent years. Very variable, some handsome strongly marked forms taken. In the trap, earliest, 3/10/64; latest, 29/1/69, but trap is not often on in winter. (Males only). Most, 19 in winter of 1966-67; 17 in winter of 1968-69.
253. *Phigalia pedaria* Fabr. (Pale Brindled Beauty). Males at lighted windows in January and February. The first specimen taken was captured in the moth trap on 1/3/52. In trap, earliest, 1/12/55; latest, 1/4/69; most, 10 in 1956 (January and February).
254. *Nyssia zonaria* Schiff. (Belted Beauty). Common. Under suitable conditions always appears in the trap during the last week or ten days of March. Earliest, 21/3/63; latest, 18/5/64; most, 128 in 1965, 74 in 1969. Larvae common, have been seen feeding on iris and wild cherry.

255. *Pachys betularia* L. (Peppered Moth). First taken on Sanday, sitting on a rock, on 7/6/58. Later in the trap on 15/5/59, 3/5/61, 29/5/64 and 2/6/67. All typical specimens.
256. *B. repandata* L. (Mottled Beauty). Very common, found everywhere. In the trap, earliest, 9/6/52; latest, 2/9/63; most, 135 in 1968, 85 in 1966. Var. *conversaria* was caught for the first time on 16/7/66, another on 30/7/66.
257. *Gnophos obscurata* Schiff. (The Annulet). On south facing cliffs and steep slopes. Not caught in the trap until 20/7/55. Earliest, 17/7/56, '65; latest, 9/9/66; most, 5 in 1969; 4 in 1966.
258. *G. myrtillata* Thunb. (Scots Annulet). Commoner than *G. obscurata*. On the moor. In the trap, earliest, 29/6/53; latest, 9/9/56; most, 17 in 1956, 16 in 1955, '68, '69.
259. *Ematurga a'omaria* L. (Common Heath). On the moorland in May. Day flier, only two taken in the trap, on 16th and 17th May 1959.
260. *Selidosema ericetaria* de Vill. (Bordered Grey). Day flier, on the moor and on southern cliffs; only once taken in the trap, a very worn male on 14/8/69.
261. *Lozogramma petraria* Hübn. (Brown Silver-line). Often to be found amongst bracken in early summer. In the trap, earliest, 16/4/53; latest, 26/6/63; most, 37 in 1959; 28 in 1953.
262. *Scodiona fagara* Thunb. (Grey Scalloped Bar) Rare. I have only one Canna specimen, taken on the moor behind Lamasgorr, 3/6/45. Never in trap, day flier.

ZYGAENIDAE

263. *Zygaena purpuralis*, Brun. (Transparent Burnet). First found on an inaccessible steep grassy cliff on Sanday by Dr Michael Harper in 1957. Another colony was found in an even more inaccessible situation near the south-west end of Canna, to be reached only by sea, by the Rev. Malcolm MacLellan and myself on 13/7/63. Both these places are inaccessible to sheep. Specimens from the second colony are sometimes very dark. One of these has been presented to the Tring Museum.
264. *Z. filipendulae* L. (Six-Spot Burnet). Widespread, occurring mixed with *Z. purpuralis* in these colonies, and scattered elsewhere, especially on Sanday. Specimens found on the Sanday *purpuralis* colony ground sometimes approach *ab. cytisi* Hübn., the pairs of spots running together. Burnets, being day fliers, are never found in the trap.

HEPIALIDAE

265. *Hepialus humuli* L. (Ghost Moth). Often common in the garden. In the trap earliest, 14/6/67; latest, 27/7/65; most, 13 in 1953, 8 in 1966. *H. humuli*'s first appearance in the trap are fairly punctual, having all taken place between June 14th and 26th, in nine years between June 22nd and 26th.
266. *H. sylvina* L. (Orange Swift). Associated with bracken. This species has not much in evidence lately; only two specimens taken in the trap since 1956, on 16/8/65 and 31/7/69. Earliest, 16/6/55; latest, 7/8/52; most, three in 1952.
267. *H. fusconebulosa* de Geer (Map-winged Swift). Common, associated with bracken. In the trap earliest, 2/6/54; latest, 14/8/69; most, 32 in 1953; 26 in 1968. A specimen of var. *gallicus* Lederer was taken in the trap on 24/6/69.